

NCR-19-7438



Dart Aerospace Ltd.
1270 Aberdeen St
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Canada

Tel (613) 632-5200
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D119-796-141
Job Sheet 194135



Part No: D119-796-141

Job Qty: 1 pcs

Part Name: Fwd Crosstube Installation Without Step (No Hardware)



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 4/25/19

Job Tracking No:

Due Date: 6/25/19

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DRWG D119-795-141 REV.H IPP REV:C 14.11.19 AS PER REV.C DD VERF:JLM IPP REV:D 14.12.12 AS
PER REV.pd1 DD VERF:JLM IPP REV:E 15.02.11 AS PER REV F JLM VERIFIED BY:DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier	Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier Lead Time	
130	Crosstubes - Bend - 1	1 pcs	6/25/19	6/25/19	0.00	3.85	Crosstubes - Bend	
140	QC 15	1 pcs	6/25/19	6/25/19	0.00	0.00	QC 15 - 12	
							QC 15 - 3	
							QC 15 - 47	
							QC 15 - 49	
							QC 15 - 58	
							QC 15 - 9	
							QC 15 - 68	
145	Crosstubes - 2 - B4B	1 pcs	6/25/19	6/25/19	0.00	3.06	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	
							Crosstubes - 4 - B4B	
150	Crosstubes - 3 - B4B	1 pcs	6/25/19	6/25/19	0.00	3.06	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	
							Crosstubes - 4 - B4B	
160	Crosstubes - 4 - B4B	1 pcs	6/25/19	6/25/19	0.00	1.49	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	
							Crosstubes - 4 - B4B	
175	QC 7	1 pcs	6/25/19	6/25/19	0.00	0.00	QC 7 - 10	
							QC 7 - 13	
							QC 7 - 14	
							QC 7 - 15	
							QC 7 - 17	
							QC 7 - 18	
							QC 7 - 19	
							QC 7 - 2	
							QC 7 - 28	
							QC 7 - 3	
							Plex 4/25/19 1:23 PM Dart.lajeunesse.marie	

Plex 4/25/19 1:23 PM Dart.lajeunesse.marie

					QC 7 - 30	
					QC 7 - 34	
					QC 7 - 36	
					QC 7 - 37	
					QC 7 - 41	
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	
					QC 7 - 50	
					QC 7 - 67	
					QC 7 - 40	
180	Outsource - 2 - NDT per QSI038	1 pcs	6/25/19		SKY002-VC	2
190	Packaging 2-1 - Receive - B4B	1 pcs	6/25/19	0.00 0.00	Packaging 2 - 1 - B4B	
					Packaging 2 - 2 - B4B	
					Packaging 2 - 3 - B4B	
					Packaging 2 - 5 - B4B	
					Packaging 2 - 4 - B4B	
					Packaging 2 - 6 - B4B	
					Packaging 2 - 7 - B4B	
					Packaging 2 - 8 - B4B	
					Packaging 2 - 9 - B4B	
					Packaging 2 - 10 - B4B	
					Packaging 2 - 11 - B4B	
					Packaging 2 - 12 - B4B	
					Packaging 2 - 13 - B4B	
					Packaging 2 - 14 - B4B	
					Packaging 2 - 15 - B4B	
					Packaging 2 - 16 - B4B	
					Packaging 2 - 17 - B4B	
					Packaging 2 - 18 - B4B	
					Packaging 2 - 19 - B4B	
					Packaging 2 - 20 - B4B	
					Packaging 2 - 21 - B4B	
					Packaging 2 - 22 - B4B	
					Packaging 2 - 23 - B4B	
					Packaging 2 - 24 - B4B	
					Packaging 2 - 25 - B4B	
					Packaging 2 - 26 - B4B	
					Packaging 2 - 27 - B4B	
					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
200	QC 6	1 pcs	6/25/19	0.00 0.00	QC 6 - 9	
					QC 6 - 68	
					QC 6 - 61	
					QC 6 - 40	
230	Spray Paint - 2 - B4B	1 pcs	6/25/19	0.00 1.36	Spray Paint - 1 - B4B	

240 QC 14	1 pcs	6/25/19	0.00 0.00	Spray Paint - 2 - B4B	
				Spray Paint - 3 - B4B	
				Spray Paint - 4 - B4B	
				QC 14 - 15	
				QC 14 - 2	
				QC 14 - 34	
				QC 14 - 41	
				QC 14 - 51	
				QC 14 - 58	
				QC 14 - 59	
				QC 14 - 9	
				QC 14 - 68	
				QC 14 - 40	
				QC 14 - 19	
242 Crosstubes - 5 - B4B	1 pcs	6/25/19	0.00 3.06	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	
				Crosstubes - 4 - B4B	
244 QC 5	1 pcs	6/25/19	0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	
				QC 5 - 9	
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
246 Spray Paint - 3 - B4B	1 pcs	6/25/19	0.00 1.36	Spray Paint - 1 - B4B	
				Spray Paint - 2 - B4B	
				Spray Paint - 3 - B4B	
				Spray Paint - 4 - B4B	
248 Spray Paint - 4 - B4B	1 pcs	6/25/19	0.00 1.36	Spray Paint - 1 - B4B	
				Spray Paint - 2 - B4B	
				Spray Paint - 3 - B4B	
				Spray Paint - 4 - B4B	
250 QC 14	1 pcs	6/25/19	0.00 0.00	QC 14 - 15	
				QC 14 - 2	
				QC 14 - 34	
				QC 14 - 41	
				QC 14 - 51	
				QC 14 - 58	
				QC 14 - 59	
				QC 14 - 9	
				QC 14 - 68	
				QC 14 - 40	
				QC 14 - 19	
252 Crosstubes - 6 - B4B	1 pcs	6/25/19	0.00 3.06	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	
				Crosstubes - 4 - B4B	
260 QC 5	1 pcs	6/25/19	0.00 0.00	QC 5 - 10	

DAS
40
9-89

AUG 12 2019

AUG 19-8-12

DAS
68
9-89

AUG 16 2019

AUG 19-8-21

AUG 19-8-22

DAS
68
9-89

AUG 23 2019

AUG 19-9-15

				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	SEP 18 2019 DAS 68
				QC 5 - 9	9-59
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
275 DC - 1 - B4B	1 pcs	6/25/19	0.00 0.00	DC - 1 - B4B	DAS 21 N/R
				DC - 2 - B4B	9-58
290 Packaging 3-1 - Stock - B4B	1 pcs	6/25/19	0.00 0.00	Packaging 3 - 1 - B4B	SEP 18 2019
				Packaging 3 - 2 - B4B	
				Packaging 3 - 3 - B4B	
				Packaging 3 - 4 - B4B	
				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
				Packaging 3 - 13 - B4B	
				Packaging 3 - 14 - B4B	
				Packaging 3 - 15 - B4B	
				Packaging 3 - 16 - B4B	
				Packaging 3 - 17 - B4B	
				Packaging 3 - 18 - B4B	
				Packaging 3 - 19 - B4B	
				Packaging 3 - 20 - B4B	
				Packaging 3 - 21 - B4B	
				Packaging 3 - 22 - B4B	AS 19-9-15
				Packaging 3 - 23 - B4B	
				Packaging 3 - 24 - B4B	
				Packaging 3 - 25 - B4B	DAS
				Packaging 3 - 26 - B4B	21
				Packaging 3 - 27 - B4B	9-59
				Packaging 3 - 28 - B4B	
				Packaging 3 - 29 - B4B	SEP 18 2019
				Packaging 3 - 30 - B4B	
				Packaging 3 - 31 - B4B	
				Packaging 3 - 32 - B4B	
				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	
300 QC 21 - FG	1 pcs	6/25/19	0.00 0.00	QC 21 - FG - 21	DAS 21
				QC 21 - FG - 70	9-59
				QC 21 - SA - 53	SEP 18 2019

Part Op 130 - CNC Bend Crosstube (CNC Alpha 160 Bender) Bend tube as per Dwg D119-796-141 using CNC bender program
 Descriptions: 140 - QC15 (QC15- Crosstube Dimensional Check)

- 145 - Crosstubes-1 (Crosstubes) 1- CUT TUBE AT HEIGHT ON FAI SHEET 2- VERIFY HEIGHT: _____ BY QC15
LEVEL INSPECTOR: _____ 3- DEBURR CUT SURFACE
- 150 - ***** ENSURE PROPER JIG POSITIONING ***** ENSURE PROPER JIG POSITIONING
***** 1-DRILL TUBE AS PER DWG USING DT _____ 2- DRILL RIVET HOLES USING DT8787 FWD 3-
DEBURR AND C'SINK RIVET HOLES AS PER DWG 4- FLIP TUBE, REPEAT STEP 2 AND 3 5- SCRIBE PART# AND
BATCH# USING VIBRATING STYLUS ON INSIDE OF CUFF AS PER DWG D119-796-141 6- INSPECT AND REMOVE
ALL MARKS FROM TUBE WITHIN LIMITS ON DWG D119-796-141
- 160 - HandFinish5 (Crosstubes Chemical Conversion) ***IMMEDIATELY AFTER GRINDING*** 1- handfinish X-TUBE
INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005.
- 175 - QC7-1 (QC7-Inspect Chemical Conversion Coat)
- 180 - Outsource2 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING
CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2
Attach copy of NDT results to work order
- 190 - Packaging2 (Receive & Inspect for Damage & Mat'l Certs) ReceiveEnsure copy of NDT results attached to work
order.
- 200 - QC6 (QC6- All purchased or subcontracted products) *** WEAR LATEX GLOVES WHEN HANDLING
CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D119-796-141
- 230 - Spray Paint (Spray Paint / NDT Room) ***VERIFY BY _____ BATCH # TO MATCH W/O
***VERIFY BY _____ PART # TO MATCH W/O _____ ***MASK SCRIBE
B# & P# AND VERIFY*** 1- Prime Inside of tube. 2- Install nut plates as per dwg (D2873-043) 3- Mask cuffs per note#2.
4- Prime exterior of tube per QSI005. Primer Batch: 5189223 Start Time: _____ Finish Time: _____
- 240 - QC14 (QC14- Inspect Spray Paint) ***VERIFY BY _____ BATCH # TO MATCH W/O _____
- 242 - Crosstubes-1 (Crosstubes) Assemble as per dwg D119-796-141 and Qsi 015 1- Abrade mating surfaces with
Scotch Brite 7447 and clean with Dupont 4105s or equivalent as per dwg. 2- Install D5152-041 with proseal 890 on
concave surface, 0.100" MIN thick as per dwg using DT10089 (identified right and left) *****MAINTAIN CLAMPING
PRESSURE ON FOR MIN 72HRS***** Proseal Batch: 5176610 EXP: 10/19 PROSEAL CURE
TIME 72 HOURS: Start: 19-8-12 Finish: 19-8-15 3- Install support and shim using
proseal 890 per dwg and clamp in position.
- 244 - QC5 (QC5- Inspect part completeness to step on W/O)***VERIFY BY _____ BATCH # TO MATCH W/O _____
- 246 - Spray Paint (Spray Paint / NDT Room) ***VERIFY BY _____ BATCH # TO MATCH W/O _____
1- Remove all non-fixed hardware and clean any excess proseal. 2- Scuff tube with Scotch Brite
7447. 3- Mask cuff per note#2. 4- Prime as per dwg and QSI005 5- Apply matte clear as per dwg and QSI005 Clear
Batch: 5184773 Primer 5189223
- 248 - Spray Paint (Spray Paint / NDT Room) ***VERIFY BY _____ BATCH # TO MATCH W/O _____
1- Mask underside of tube as per dwg. Mask cuff per note#2. 2- Scuff tube with Scotch Brite 7447
3- Paint outside of crosstube Paint Batch: 5204429
- 250 - QC14 (QC14- Inspect Spray Paint) ***VERIFY BY _____ BATCH # TO MATCH W/O _____
- 252 - Crosstubes-1 (Crosstubes) 1- Re-install non fixed hardware per dwg ***Torque all clamps to 80-100 IN-LBS.*** 2-
Apply a filet-seal of proseal 890 around supports. Allow proseal to dry before inspecting. Proseal 890
Batch: 5176610 EXP: 10/19 PROSEAL CURE TIME 72 HOURS:
Start: _____ Finish: _____
- 260 - QC5 (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL
HAS CURED AS PER DWG.*** ***VERIFY BY _____ BATCH # TO MATCH W/O _____
- 275 - DC (Document Control) Photocopy bluefile and create labels as per PPP D119-796-141 chg 004
- 290 - Packaging3-1 (Identify as per dwg & Stock Location: _____) Identify and pack for shipping as per PPP D119-796-
141
- 300 - QC21 (QC21- Final Inspection - Work Order Release) on w/o 199492

Job BOM

Part / Item	Component Name	Quantity	Operation
D119-796-141TRN	Crosstube Turning Detail	1 pcs (1 ea)	130-Crosstubes - Bend - 1
CR3212-4-08	Rivet	16 Ea (16 ea)	242-Crosstubes - 5 - B4B
D2873-043	Nut Plate Assembly	4 pcs (4 ea)	242-Crosstubes - 5 - B4B
D5123-3	Clamp Cushion	8 pcs (8 ea)	242-Crosstubes - 5 - B4B
D5124-1	Fwd Support	2 pcs (2 ea)	242-Crosstubes - 5 - B4B
D5152-041	Fwd Post Mount Assembly	2 pcs (2 ea)	242-Crosstubes - 5 - B4B
D5305-1	Shim	2 pcs (2 ea)	242-Crosstubes - 5 - B4B
MS21920-24	Clamp	4 Ea (4 ea)	242-Crosstubes - 5 - B4B
MS21920-22	Clamp	4 Ea (4 ea)	242-Crosstubes - 5 - B4B

Container
5179505

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
130-Crosstubes - Bend - 1	D119-796-141TRN	1	3	0
242-Crosstubes - 5 - B4B	CR3212-4-08	16 5173048	141	0
	D2873-043	4 5186472	51	0
	D5123-3 160079	8	175	0
	D5124-1 5189936	2	8	0
	D5152-041 5161400	2	10	0
	D5305-1 5144003	2	10	0
	MS21920-22 5181728	4	55	0
	MS21920-24 5065334 5183442	4	25	0

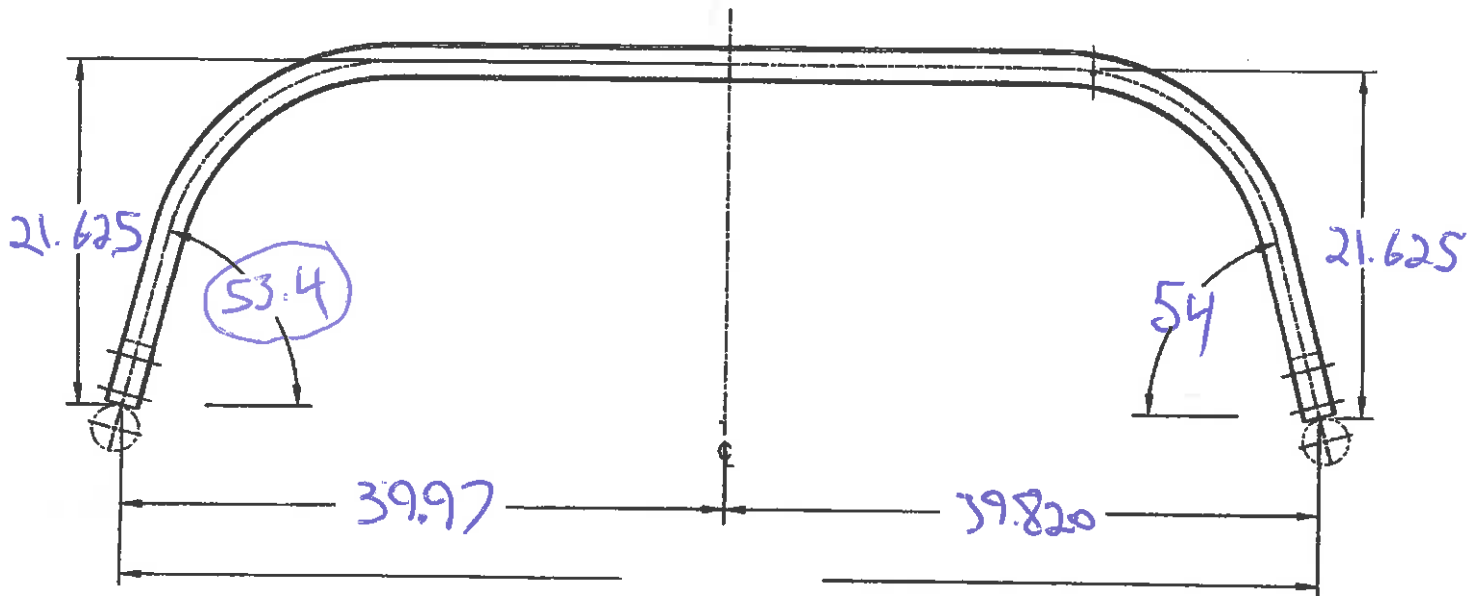
Part Specifications

Spec No	Description	Target/Tolerance	Limits	Type	Special Comments
1	Crosstube Assembly (AW119 MKI Fwd)	6.000Inches ± 0.030	6.030 5.970		
2	Crosstube Assembly (AW119 MKI Fwd)	2.516Inches ± 0.005	2.521 2.511		
3	Crosstube Assembly (AW119 MKI Fwd)	2.333Inches + 0.005 - 0.000	2.338 2.333		
4	Crosstube Assembly (AW119 MKI Fwd)	2.333Inches + 0.005 - 0.000	2.338 2.333		
5	Crosstube Assembly (AW119 MKI Fwd)	2.408Inches + 0.005 - 0.000	2.413 2.408		
6	Crosstube Assembly (AW119 MKI Fwd)	2.502Inches + 0.005 - 0.000	2.507 2.502		
7	Crosstube Assembly (AW119 MKI Fwd)	2.596Inches + 0.005 - 0.000	2.601 2.596		
8	Crosstube Assembly (AW119 MKI Fwd)	2.596Inches + 0.005 - 0.000	2.601 2.596		
9	Crosstube Assembly (AW119 MKI Fwd)	6.000Inches ± 0.030	6.030 5.970		
10	Crosstube Assembly (AW119 MKI Fwd)	2.516Inches ± 0.005	2.521 2.511		
11	Crosstube Assembly (AW119 MKI Fwd)	2.333Inches + 0.005 - 0.000	2.338 2.333		
12	Crosstube Assembly (AW119 MKI Fwd)	2.333Inches + 0.005 - 0.000	2.338 2.333		
13	Crosstube Assembly (AW119 MKI Fwd)	2.408Inches + 0.005 - 0.000	2.413 2.408		
14	Crosstube Assembly (AW119 MKI Fwd)	2.502Inches + 0.005 - 0.000	2.507 2.502		
15	Crosstube Assembly (AW119 MKI Fwd)	2.596Inches + 0.005 - 0.000	2.601 2.596		
16	Crosstube Assembly (AW119 MKI Fwd)	2.596Inches + 0.005 - 0.000	2.601 2.596		
17	Crosstube Assembly (AW119 MKI Fwd)	102.260Inches ± 0.020	102.280 102.240		

Plex 4/25/19 1:23 PM Dart.lajeunesse.marie

DART AEROSPACE LTD		Work Order:	194135
Description: Crosstube Fwd, with Step		Part Number:	D119-796-141
Inspection Dwg: D119-796-141 Rev: H		Page 1 of 1	

Required Dimension	Min	Max
Height	21.490	21.750
1/2 Span	39.820	40.080
Angle	54°	57°
Total Span	79.640	80.160
Bending Passes	8	--
Crushing	--	6.8%



2.197
2.468

	Side A	Side B
Bending Passes	11	11
Crushing	5.8%	5.6%
Comments		

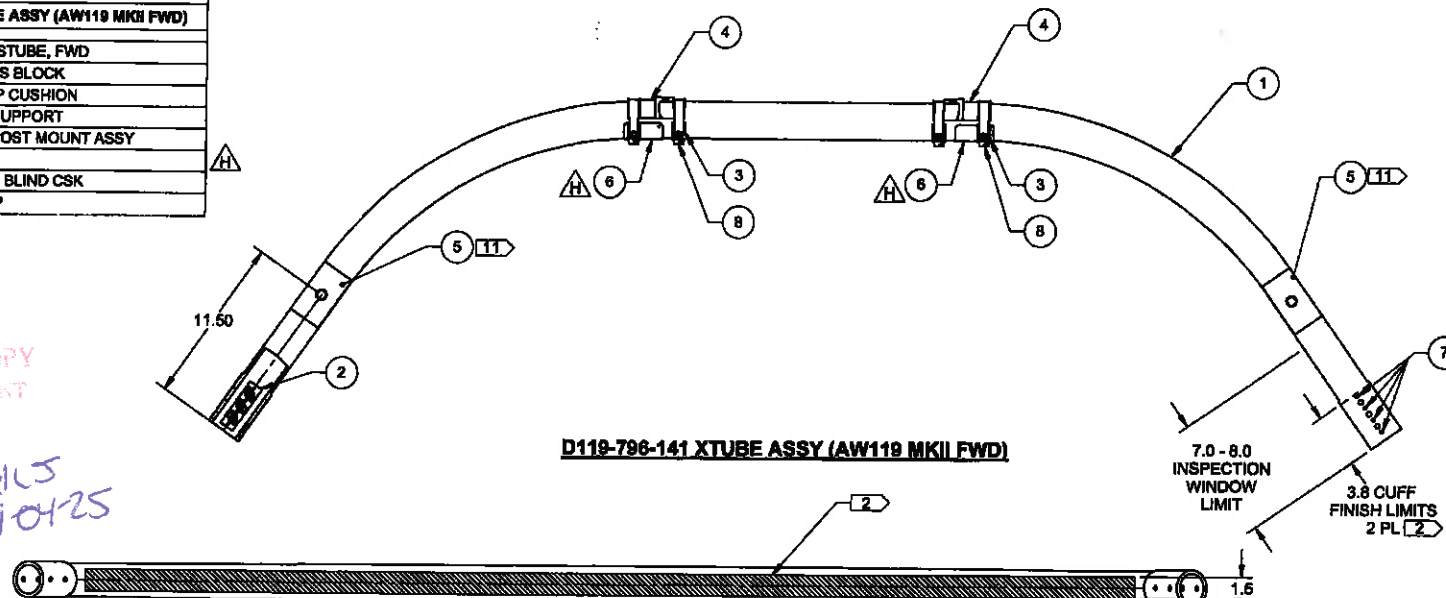
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QC15 Inspection	
Date	19-07-05

Rev	Date	Change	Revised by	Approved
A	15.04.14	New Issue	KJ	
B	15.11.12	Dwg Rev updated	KJ	
C	16.01.15	Dwg Rev updated	KJ	up

ITEM	QTY	P/N	DESCRIPTION
	X	D119-796-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-796-141BND	CROSSTUBE, FWD
2	4	D2873-043	RADIUS BLOCK
3	4	D5123-3	CLAMP CUSHION
4	2	D5124-1	FWD SUPPORT
5	2	D5152-041	FWD POST MOUNT ASSY
6	2	D5305-1	SHIM
7	16	CR3212-4-08	RIVET, BLIND CSK
8	4	MS21920-24	CLAMP

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RETURN TO
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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 194135 MJS
190125



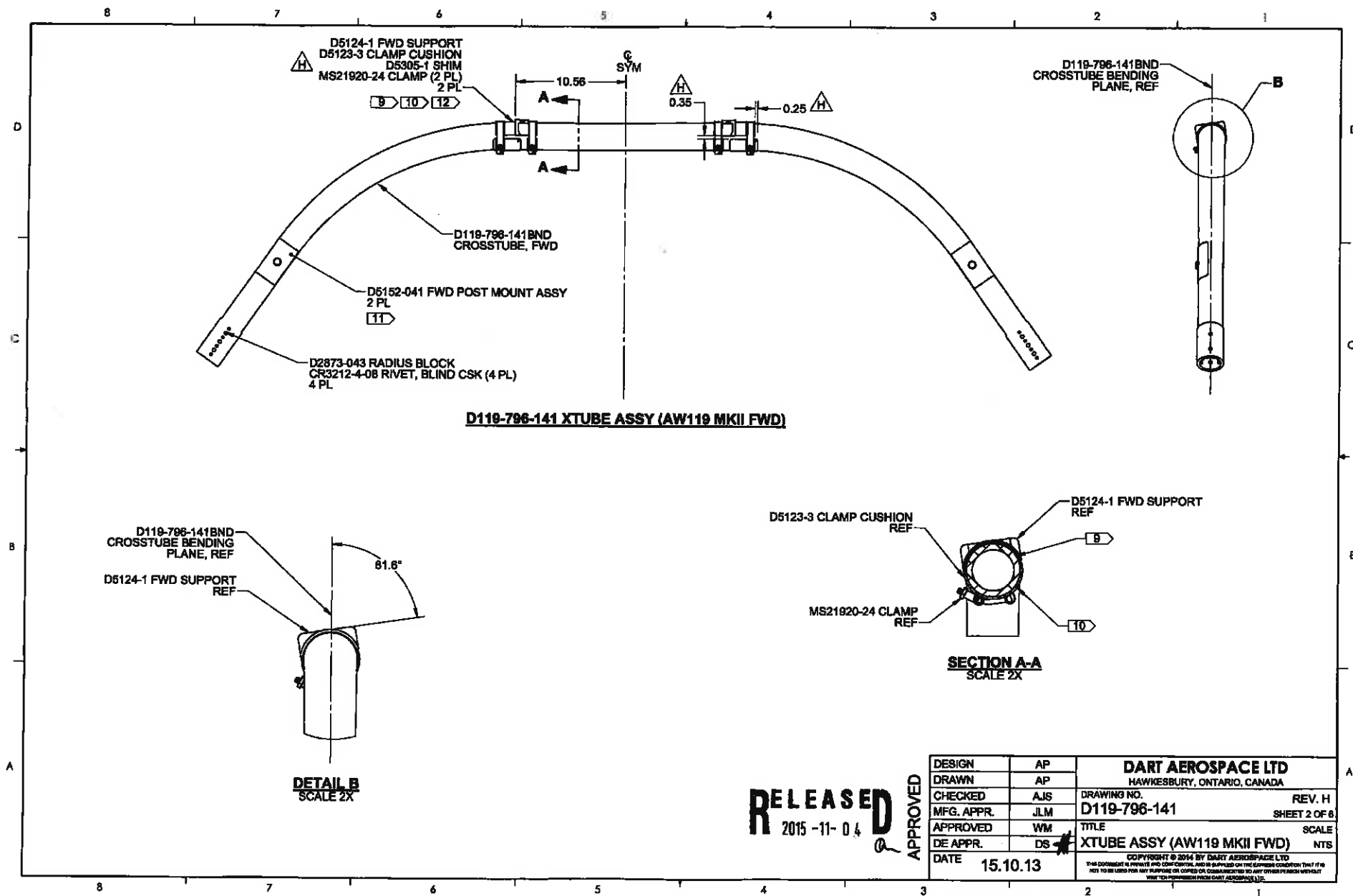
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NOTES:

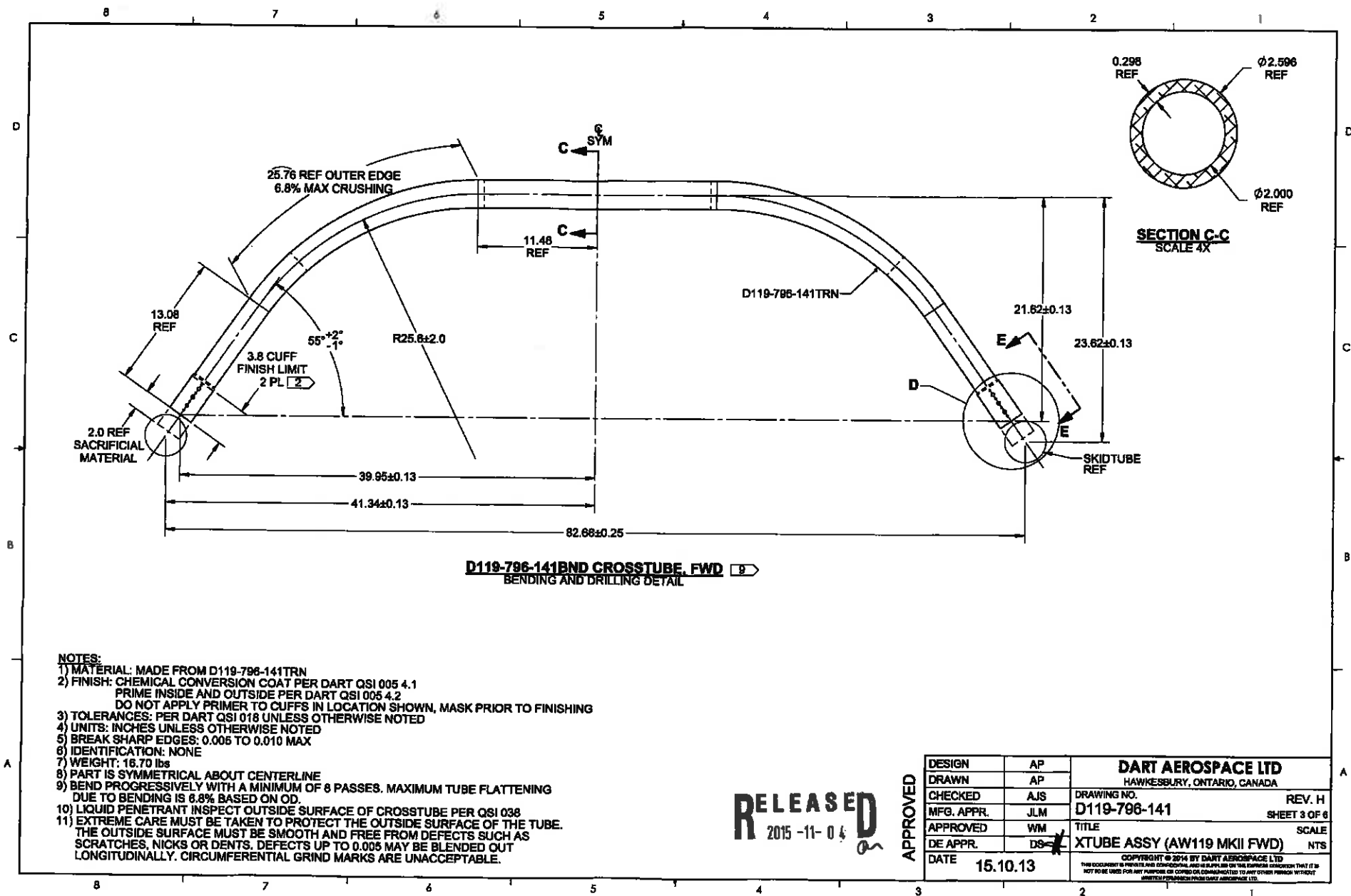
- 1) MATERIAL: N/A
- 2) FINISH: APPLY MATTE CLEAR COAT PER QSI 005 4.2
MASK D5124-1 FWD SUPPORTS, D5305-1 SHIMS AS WELL AS UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA),
PAINT OUTSIDE PER DART QSI 005 4.2 AFTER APPLYING CLEAR COAT
DO NOT APPLY FINISH (PAINT OR CLEAR COAT) TO CUFFS IN LOCATION SHOWN, MASK PRIOR TO FINISHING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.54 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS.
DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) PRIOR TO FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASHN'WIPE DEGREASER. APPLY A 0.1 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY, THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASHN'WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. LOCATE D5152-041 USING TOOL DT10089.
- 12) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5305-1 SHIM WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASHN'WIPE DEGREASER. INSTALL D5305-1 SHIM WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. USE ADDITIONAL TEMPORARY MS21920-24 CLAMP TO APPLY CLAMPING PRESSURE FOR 72 HOURS.

REV.	DESCRIPTION	BY	DATE
H	ADD D5305-1 SHIM, D5024-103 WAS D5005-103, D5124-1 NOW INSTALLED ON PRIMER	AP	15.10.13
G	FINISHING ORDER ADJUSTED, CR3212-4-08 WAS -07, CUFF DIA TOLERANCE INCREASED TO +/- 0.005	AP	15.04.24
F	REMOVED PRIME/PAINT ON CUFFS, 2.518 WAS 2.500 (C8-5)	AP	15.02.03
E	D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST, SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (B7-2) DIMENSIONED FROM NEW DATUM	DB	15.01.15
D	ADD D5150-1 STEP POST (2X), MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141 TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-08 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES, RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D119-796-141 TITLE XTUBE ASSY (AW119 MKII FWD) SCALE NTS REV. H SHEET 1 OF 8 COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR REPRODUCED OR COPIED OR IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.	
DRAWN	AP		
CHECKED	AJS		
MFG. APPR.	JLM		
APPROVED	WM		
DE APPR.	DS	DATE 15.10.13	

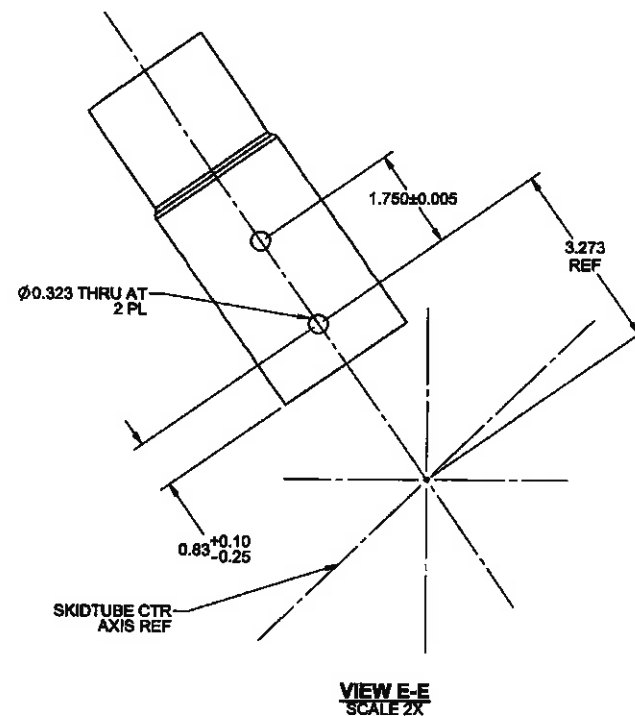
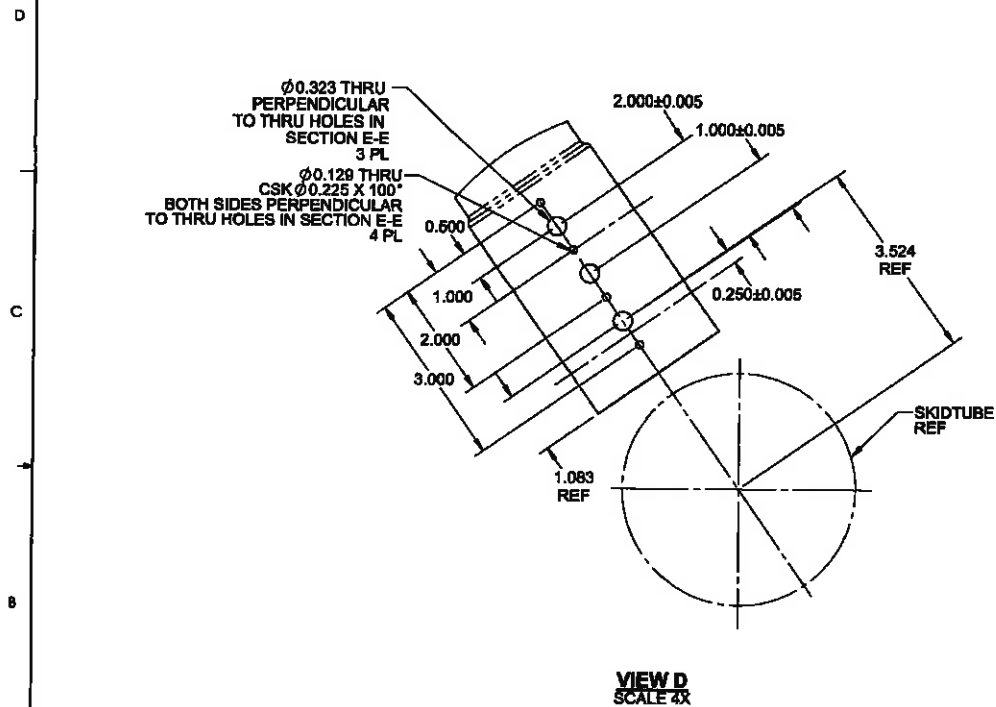
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DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 2 OF 8
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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8 7 6 5 4 3 2 1



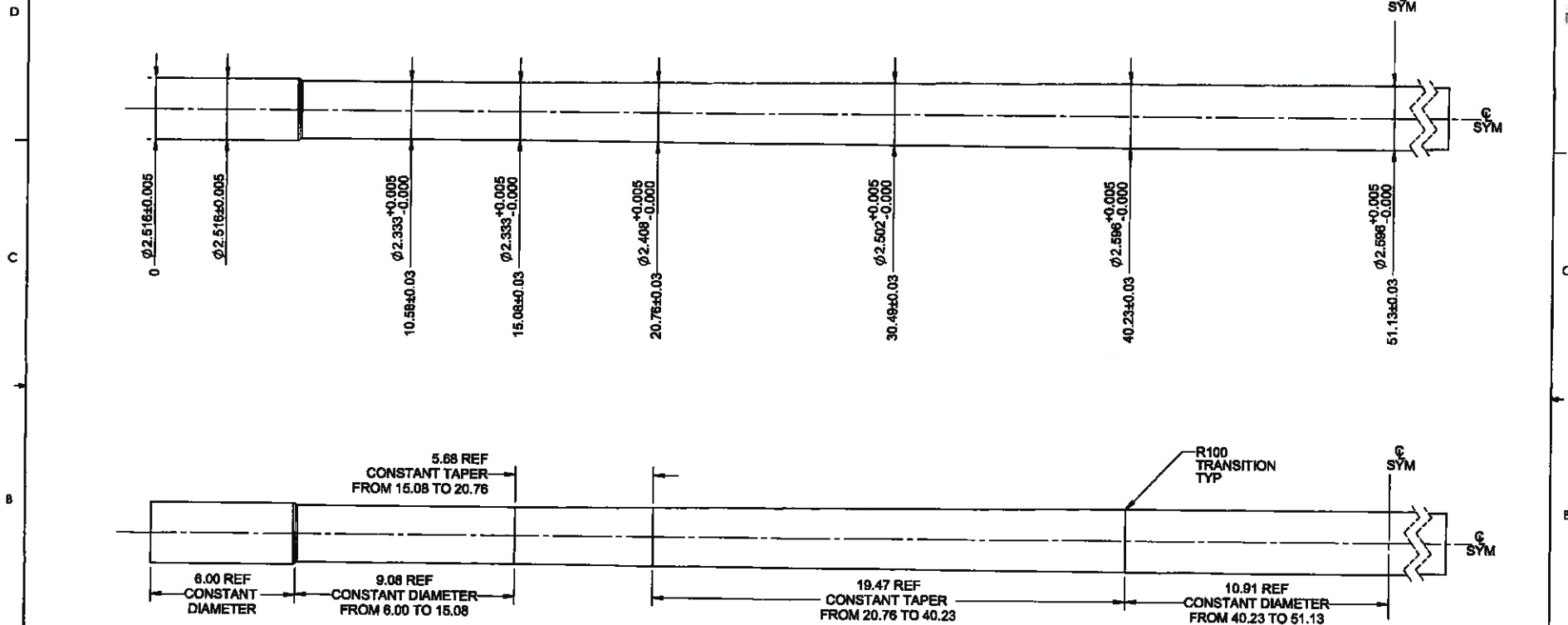
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2015-11-04

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DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 4 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1



D119-796-141TRN CROSSTUBE, FWD

NOTES:

- 1) MATERIAL: MANUFACTURE FROM D6024-103 (PREFERRED) OR D6005-103
FINISHED LENGTH = 102.26 ± 0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE

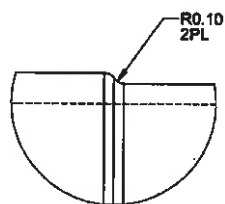
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2015-11-04

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CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 5 OF 8
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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8 7 6 5 4 3 2 1

D119-796-141TRN CROSSTUBE, FWD
 SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS



DETAIL F
 SCALE 2X

CHAMFER ID
 AS REQUIRED
 FOR TOOLING

0.258 REF
 NOMINAL WALL

0.167 REF
 NOMINAL WALL
 10.58±0.03

0.167 REF
 NOMINAL WALL
 15.08±0.03

0.204 REF
 NOMINAL WALL
 20.78±0.03

0.251 REF
 NOMINAL WALL
 30.48±0.03

0.298 REF
 NOMINAL WALL
 40.23±0.03

0.298 REF
 NOMINAL WALL
 51.13±0.03

C
 SYM

C
 SYM

RELEASED
 2015-11-04

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MFG. APPR.	JLM	D119-796-141	SHEET 6 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
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Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044190



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

Attention: Jenne, Heather

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: POHB044190
PO Date: 8/1/19
Due Date: 8/2/19
Purchase Order Revision:
Revision Date:
Ship-To Contact: Guerin, Kimberley
Phone: 613-632-5200 Ext: 298
kguerin@dartaero.com

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	198181	D130-1048-141	EC130 Fwd Crosstube : TC STC SH19-4 Issue 1 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** ISSUE P/O: _____ Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order NDT C OF C IS REQUIRED	Firmed	-	8/2/19	1 pcs	0 pcs	1 pcs	\$169.00/pcs	\$169.00
2	194132	D119-796-141	Fwd Crosstube Installation Without Step (No Hardware) : TC STC SH14-45-Issue 1, FAA STC SR03504NY 15/01/28, EASA STC 10052022 Revision 1 15/02/13, DGCA INDIA LoA 07-09/2011-AED (Part) 15/07/16, BRAZIL STC 2015S07-16 15/07/30, CAAP PHILIPPINES LoA 16/05/11, CHINA VSTC0757 16/07/22, RUSSIA STC CT316-A119 16/08/11, DGAC INDONESIA STC SR025 18/02/19 Outsource2 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/2/19	1 pcs	0 pcs	1 pcs	\$169.00/pcs	\$169.00



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044190



Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
194133			1 X AUG 0 2 2019	Filed	-	8/2/19	1 pcs	0 pcs	1 pcs	\$169.00/pcs	\$169.00
194134			1 X AUG 0 2 2019	Filed	-	8/2/19	1 pcs	0 pcs	1 pcs	\$169.00/pcs	\$169.00
194135			1 X AUG 0 2 2019	Filed	-	8/2/19	1 pcs	0 pcs	1 pcs	\$169.00/pcs	\$169.00
Sub Total:							4	0	4		\$676.00

DAS
40
9-89

Grand Total: \$845.00

Order Notes

Procurement Quality Clauses

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing

A024 process certifications
A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier
A043 refension of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 8/2/19 8:57 AM Dart. Guerin.Kimberley

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO41275	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: POHB044190 ✓
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:**CARRY OUT NDT INSPECTION (LIQUID PENETRANT) ON 5 CROSSTUBES**

ITEM ID: D119-796-141 FWD CROSSTUBE INST. WITHOUT STEPS.

1 - WORK ORDER ID#: 194132 ✓

2 - WORK ORDER ID#: 194133 ✓

3 - WORK ORDER ID#: 194134 ✓

4 - WORK ORDER ID#: 194135 ✓

DAS
40
9-89

ITEM ID: D130-1048-141 EC130 FWD CROSSTUBE.

5 - WORK ORDER ID#: 198181 ✓

Action Taken:						Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-5) AS PER ASTM1417M-16 NO CRACK FOUND PEN ZL-37, MPO23206, CLEANER SKC-S MPO15030, EMU. MPO15896, DEV. MPO23451, UV LIGHT M-20142						2 Aug 2019	
<i>Description</i>	<i>Location</i>	<i>P/N</i>	<i>Qty</i>	<i>Batch</i>	<i>S/N Off</i>	<i>S/N On</i>	
			- N/A -				

RECEIVED

AUG 02 2019

DART AEROSPACE LTD.

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	 ANTONINO MARCHETTA	ACA/SCA Stamp 	Date:
Name:			2 Aug 2019

Entered: Zur Date: Oct 21/19



NCR No.

19-7438

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

Route update only

Job: 194135		DISPOSITION		DEPARTMENT/PROCESS			
Part No. D19-796-141		Rework ☐ Scrap ☐ Use-as-is ☒		Skid-tube ☐ Machining ☐ Large Fab ☐	Cross tube ☒ Small Fab ☐ Finishing ☐	Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐	Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐
Date: 2019-07-08		Sequence #:		QTY Affected: 1		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By		Lead hand / Supervisor	
One angle is 53.4°		Acceptable		JTW 19-10-7		QC / QA Coordinator DAS 68 9-89 OCT 09 2019	
Root Cause		FAULT CATEGORY					
Operator ☐ Manufacturing Process ☒ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☒ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread					
		Other/Details:					